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Two new lichenicolous species of *Dacampia* on *Teloschistaceae*

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Abstract—Two new lichenicolous fungi in the genus *Dacampia* are described: *Dacampia caloplacicola* on the thallus of saxicolous *Caloplaca crenularia* from western Turkey and *D. xanthomendozae* on the thallus of epiphytic *Xanthomendoza* from Argentina. The new species differ from those previously recognized in the genus in size and septation of ascospores, as well as occurring on unrelated hosts. They are the first species of the genus recognized on the host lichen family *Teloschistaceae*.

Key words—*Ascomycota*, *Dacampiaceae*, biodiversity, lichens

Introduction

A key and synopsis to the seven known species of *Dacampia*, along with drawings of the ascospores was recently provided by Halıcı & Hawksworth (2008). With the description of two additional species — *Dacampia cladoniicola* Halici & A.O. Türk (Halıcı et al. 2008) and *D. rubra* Halici et al. (Halıcı et al. 2009) — the number of species in the genus increased to nine. Here, we describe two more *Dacampia* species: *D. caloplacicola*, occurring on *Caloplaca crenularia* (With.) J.R. Laundon from Turkey and *D. xanthomendozae* on *Xanthomendoza* from Argentina.

Material and methods

The type material of the new species is deposited in ANES and BCRU. Specimens were examined with an Olympus BH-2 research microscope fitted

with Nomarski differential interference contrast optics and a drawing tube. Photomicrographs were prepared on a Nikon Eclipse 80i and a Nikon Coolpix P2. Sections were prepared by hand and examined in I (Merck Lugol's iodine), with [KI] and without [I] pre-treatment with 10% KOH), 10% KOH alone, and water. Asci and ascospore measurements were made in water. Ascospore measurements were given as: (min.)(X–SD)–*X*–(X+SD)(max.), where min. and max. are the extreme values, X the arithmetic mean, and SD the corresponding standard deviation. The length/breadth (l/b) ratio of the ascospores is given in the same way.

The species

Dacampia caloplacicola Halici, Candan & Etayo, **sp. nov.** Figure 1

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Dacampia species insignis ascosporis (3–)4-transseptatis et 1–2-longiseptatis, (17–)18.5–19.9–21.3(–23) × (6–)6.5–7.2–7.9(–8) µm, l/b = 2.5–2.8–3.0(–3.3).

Type collection: Turkey, Afyon, Sandıklı, North of Çevrepınar Village, 38°30'N, 29°59'E, alt. 1010 m, on the thallus of *Caloplaca crenularia* on siliceous rocks, 27 November 2007, leg. M. Candan (ANES 12291 – **holotype**).

Etymology: The epithet "*caloplacicola*" refers to the host *Caloplaca*.

Description: Lichenicolous, on the thallus of *Caloplaca crenularia*, causing discoloration, and eventually destroying the thallus, pathogenic. Vegetative hyphae not observed. Ascomata perithecioid, arising singly, immersed at first with only the ostiole and surrounding zone externally visible, semi-immersed at maturity, 300–500 µm diam, black, subglobose. Exciple composed of 6–8 layers of angular pseudoparenchymatous cells (textura angularis), 20–50 µm thick, the individual cells somewhat radially compressed, reddish brown to brown, individual cells 10–16 × 6–8 µm in vertical section, smooth, walls ca 1 µm thick. Hamathecium of cellular pseudoparaphyses, abundant, septate, branched and anastomosed, 1–2 µm wide, KI, I–. Asci elongate-clavate, shortly stalked, bitunicate in structure, 8-spored when young, in general (4–)6-spored at maturity, I–, 71–85 × 13–16 µm (*n* = 20). Ascospores irregularly biseriately or uniseriately arranged in the asci, ellipsoid, brown and smooth, muriform, with (3–)4 transsepta and 1–2 longisepta, generally constricted at the medium septa, sometimes with small lipid droplets in each cell, terminal cells concolorous with central cells, rounded to somewhat broadly pointed at the apices, (17–)18.5–*19.9*–21.3(–23) × (6–)6.5–*7.2*–7.9(–8) µm (*n* = 36), l/b 2.5–*2.8*–3.0(–3.3) (*n* = 36). Conidiomata not observed.

Ecology and distribution: The species appears to be pathogenic as discoloration is evident and it eventually destroys the host thallus. The species is known only from type locality on the thallus of *Caloplaca crenularia* on siliceous rocks in the western part of Turkey at an elevation 1010 m.

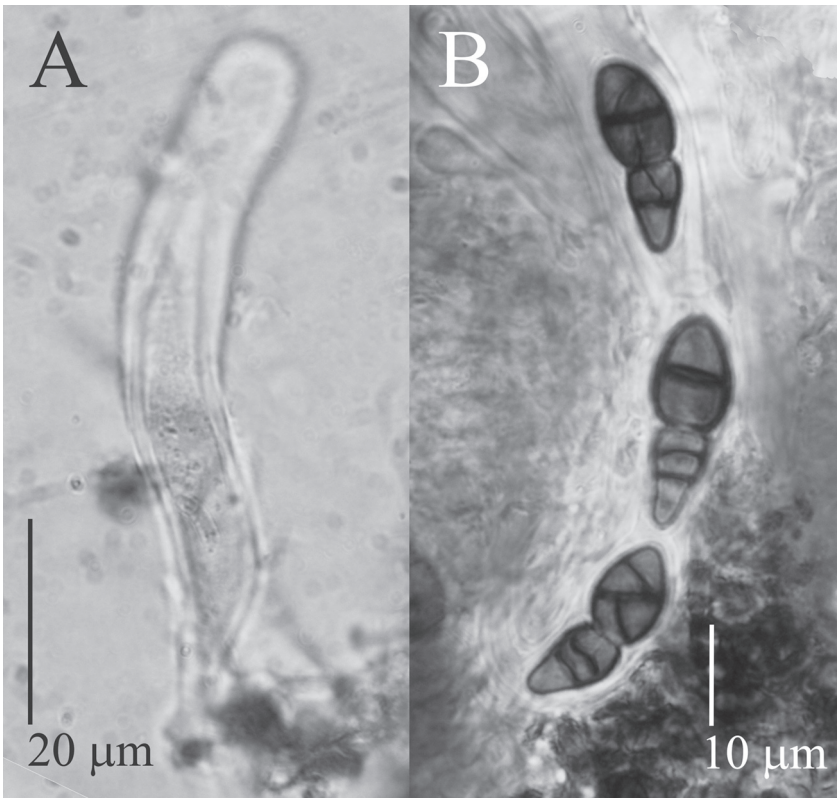

Fig. 1. *Dacampia caloplacicola* (holotype). A, empty ascus; B, ascospores uniseriately arranged in an ascus.

Observations: *Dacampia caloplacicola* is the first species of *Dacampia* recognized as lichenicolous on the genus *Caloplaca*.

The septation and size of ascospores of *Dacampia caloplacicola* [(17–)18.5–*19.9*–21.3(–23) × (6–)6.5–*7.2*–7.9(–8) µm vs. 18–25 × 8–10 µm] and the ascomata sizes [300–500 µm vs. 200–600 µm] are most similar to *D. engeliana* (Saut.) A. Massal., a species known on *Solorina saccata* that does not cause any colored and circular patches on the host thallus (Hawksworth 1986, Halıcı & Hawksworth 2007). *Dacampia rufescentis* (Vouaux) D. Hawksw. (Hawksworth 1986, Halıcı & Hawksworth 2007) and *D. cladoniicola* (Halıcı et al. 2008) have also a similar septation of ascospores, but these are much longer and wider in *D. rufescentis* [(23–)24.5–27 × 11–13 µm] and much smaller in *D. cladoniicola* [(9.5–)10.5–12(–12.5) × (4.5–)5.5–6.5 µm], apart from different hosts.

Dacampia xanthomendozae Etayo & Halici, **sp. nov.** FIGURE 2

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Dacampia species insignis ascosporis (4–)5-transseptatis et 2–5-longiseptatis, (26.5–) 28–30–32(–35.5) × (10.5–)10.9–12–13.1(–13.5) µm, l/b = (2.2)–2.3–2.5–2.7(–2.9).

TYPE COLLECTION: Argentina, Chubut, 5 km near the border with Futaleufú, growing on *Austrocedrus* dispersed amongst *Rosa* bushes, 43°11'19"S, 71°31'45"W, alt. 430 m, on the thallus of epiphytic *Xanthomendoza*, 4 February 2006, leg. J. Etayo 23703 & J. Amigo (BCRU – **holotype**).

ETYMOLOGY: The epithet "*xanthomendozae*" refers to the host *Xanthomendoza*.

DESCRIPTION: Lichenicolous, on the thallus of *Xanthomendoza*. VEGETATIVE HYPHAE not observed. ASCOMATA perithecioid, arising singly or grouped, immersed to semi-immersed at maturity, 150–200 µm diam, black, subglobose. EXCIPLE composed of several layers of angular pseudoparenchymatous cells, colorless inside, brownish black in the external layers, of textura angularis, 10–20 µm thick, up to 40 µm in the ostiolar region, reddish brown to brown, walls of exciple cells thin, ca. 1 µm thick. HAMATHECIUM of cellular pseudoparaphyses, abundant, septate, branched and anastomosed, 2–3 µm wide; KI, I–. ASCI elongate-clavate, shortly stalked, wall ca. 2 µm thick, with a small ocular chamber, (4–)6-spored at maturity, I–, 73–95 × 16–23 µm (n = 5). ASCOSPORES normally biseriately arranged in the asci, ellipsoid, golden-brown to brown, muriform, with (4–)5 transsepta and 2–5 longisepta, not constricted medially but slightly constricted at the septa, sometimes with small lipid droplets in each cell, terminal cells concolorous with central cells, rounded to somewhat slightly pointed at the apices, with a verruculose surface, (26.5–)28–*30*–32 (–35.5) × (10.5–)10.9–*12*–13.1(–13.5) µm (n = 20), l/b (2.2)–2.3–*2.5*–2.7(–2.9) (n = 20). CONIDIOMATA not observed.

ECOLOGY AND DISTRIBUTION: The species is clearly pathogenic, producing a blackening on the host thallus and apparently destroying it. The infection is also shared by an unidentified *Arthonia*, more common than *D. xanthomendozae* in the type material. It grows on a sterile *Xanthomendoza* with marginal soredia, small hairs in the lobes and bacillar conidia of 4–5 × 0.5 µm, similar to *X. ulophyllodes* (Räsänen) Søchtinget al., growing on isolated and exposed *Austrocedrus* in open bushy areas. It is known only from the type locality in southern Argentina at an elevation of 430 m.

OBSERVATIONS: The large ascospore size of this species approaches it to *D. hookeri* (Borrer) A. Massal., with ascospores of 30–36 × 11–16 µm, and *D. rhizocarpicola* D. Hawksw., with ascospores of (30–)34–37.5(–39) × (10–) 14.5–16 µm. The first species has 8-spored asci uniseriately arranged, and it grows in close association with *Solorina* thalli (Poelt 1969, Henssen 1995). *D. rhizocarpicola*, apart from growing on *Rhizocarpon obscuratum* (Halıcı &

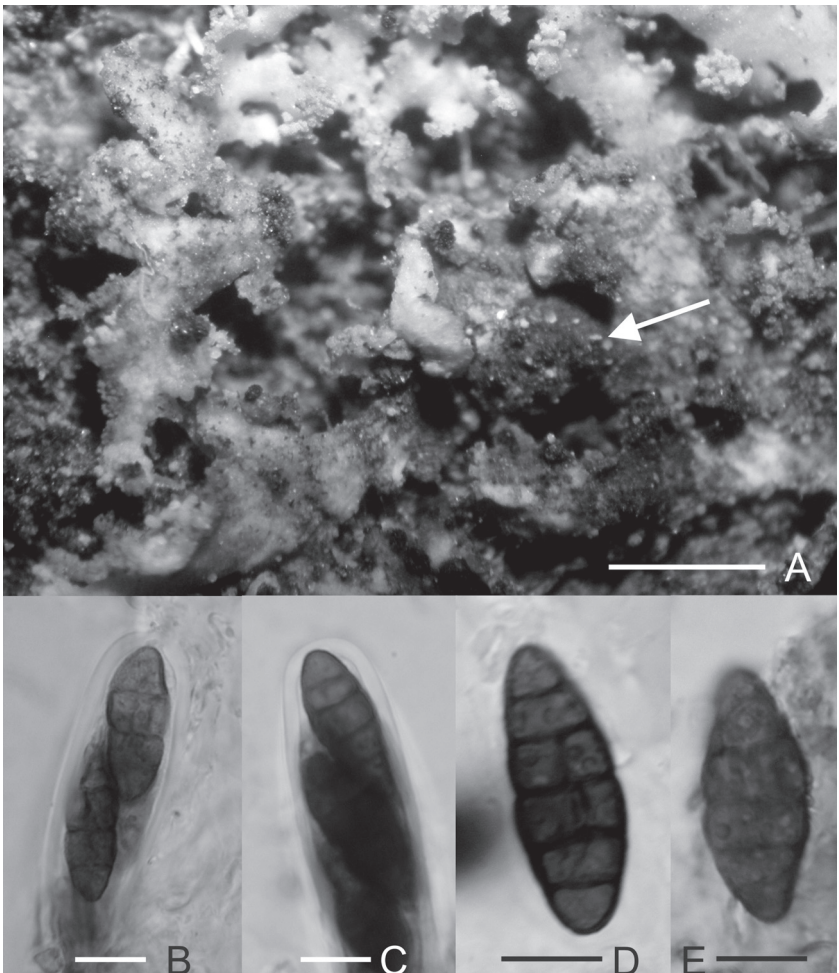

Fig. 2. *Dacampia xanthomendozae* (holotype). A, some ascomata on blackish thallus of the host. B, C, asci apex with ascospores. D, E, ascospores. Scales: A = 0,5 mm; B–E = 10 μm.

Hawksworth 2008), has 2–4 spored asci and ascospores that are larger and especially wider than those of *D. xanthomendozae*. This is the second known species of *Dacampia* on *Teloschistales*, the first being the above described *D. caloplacicola*, a species that grows on a crustose and saxicolous *Caloplaca* species, and with larger perithecia and smaller, less septate ascospores with a medial constriction.

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